Restricted

NAVY DEPARTMENT

BUMED NEWS LETTER

a digest of timely information

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TABLE OF CONTENTS

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The Current Epidemic of Mild Influenza: Public health reports during the entire past year have shown localized outbreaks of an influenza-like infection occurring in widely scattered areas throughout the world. Where isolation and identification of the causative agent have been possible, Influenza A virus has been demonstrated in approximately 7 out of 10 cases. Reports from New York, Michigan, Minnesota and the British Isles are in rough agreement on this figure.

Every month throughout 1943 the incidence of reported "acute catarrhal fever" in the U.S. Navy has been consistently above the median incidence of the past 9 years, but the rise above the median has been particularly sharp during November and December. Every month, January through November, the incidence of reported "influenza" in the U.S. Navy has been consistently below the median incidence of the past 9 years; however, the estimated incidence for December runs considerably above the 9-year median.

The differentiation between acute catarrhal fever and influenza is made in most of our Naval activities upon a clinical basis and on that basis the number of acute catarrhal fever cases per case of influenza has decreased each week since November 1 as follows:

Week Ending	Cases of Acute Catarrhal Fever Reported for Every Case of Influenza Reported
Nov. 6	1,899
Nov. 13	1,534
Nov. 20	398
Nov. 27	261
Dec. 4	49
Dec. 11	41

It would therefore appear that the majority of the cases reported as acute catarrhal fever were in reality Influenza A and that a clearer comprehension of the present epidemic will be gained if we ignore the clinical differentiation between the two diseases and combine the figures for acute catarrhal fever with those for influenza.

If we thus combine the reports of acute catarrhal fever with those of influenza, we find the current epidemic showing the following characteristics amongst our Naval personnel:

(1) It appeared first in the Naval activities in the northwest and north central sections. The annual rate in the 13th Naval District was 220 per 1,000 for the week ending August 28, and since September 11 there has been no week when the rate fell below 150 per 1,000 in either the 9th or 13th District.

(2) It became steadily more widespread in the 13th and 9th Districts rising to a peak annual rate of 652 in the 13th, and 1,015 in the 9th District for the week ending December 4. The rate for the week ending December 11 is apparently becoming lower in both of these Districts.

(3) Spreading of the epidemic to other Districts apparently did not occur until the week ending November 13, and in no previous week did the annual rate rise above 150 per 1,000 in any Districts other than the 9th and 13th.

(4) Since November 7 extension of the epidemic has involved the other Districts (aside from the 9th and 13th) in the following order:

Week Ending

Nov. 13 - 3d and 1st Districts
Nov. 20 - 5th, 8th and 11th Districts
Nov. 27 - 6th and 4th Districts
Dec. 4 - 12th and 7th Districts

(5) It would appear that the epidemic had reached its peak and was already receding in Districts 9, 13, 5 and 6 during the week ending December 11. Thus the epidemic spread from the northeastern to the north central and southwestern regions of the country. Extension to other regions occurred in the following order: northeastern, south central, central Atlantic, far western and southeastern.

Although the incidence of this disease has been high, the reports of pneumonia, delayed convalescence or serious complications have so far been comparatively few. It is well to remember, however, that the first wave of the influenza epidemic occurring in May and June 1918 was accompanied by but little if any pneumonia. It was the second wave of the epidemic occurring in October, November and December 1918 which carried with it the pneumonia and high mortality. There is no reason to anticipate a recurrence of the 1918 experience, but if such does occur, the efficacy of our new-found sulfonamides in dealing with the pneumonia problem will be put to its supreme test. (D.F.S.)

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Erratum: Page 2, paragraph 2, Bumed News Letter, Vol. 2, No. 13, (Scrub Typhus) read "diminished auditory acuity" for "auditory hyperacuity."

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British Surgery in the Middle East: The following passages are taken from a paper by Logie entitled "Surgical Gleanings from the Middle East":

"The diet of the badly wounded, especially those with large suppurating wounds, does not get the attention it merits. They lose body fluids and protein in the discharge; they become anemic (in wartime more anemia is seen in surgical than in medical wards); and they lose their appetite and powers of digestion so that their losses are not made good and a vicious circle is initiated.

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"Early skin grafting is advisable for all wounds with a skin defect. Healing is hastened, contractures and weak scars are avoided and earlier return to duty is obtained. The 'pinch' graft is the best for general use; it is easy to do, and, because it allows free drainage between the grafts, it will 'take' in wounds which are by no means aseptic, and therefore can be applied earlier than other forms of grafting. The wounds should be rendered as clean and healthy as possible and the percentage take can be increased by applying sulfanilamide to the raw area before grafting.

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"Never set out to remove foreign bodies, per se, without X-ray localization. Do not try to remove foreign bodies just because they happen to be present.

"Clean through-and-through bullet wounds should not be explored unless there is rapid swelling, in which case the wound should be opened up, the clot evacuated and the bleeding point tied. Increasing and unrelieved swelling and pressure jeopardize the vascularity of the part, with possibilities of gangrene, infection and secondary hemorrhage; or a false aneurysm may develop later whose treatment, because of fibrosis and the melting of tissues and important structures, may be difficult.

"Finally, it cannot be repeated too often that, with the exception of wounds of the head, small sucking chest wounds, and deliberate abdominal incisions, no war wound should be closed by suture in the forward area.

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"To control bleeding, a firm dressing nearly always suffices; packing is seldom called for and a tourniquet practically never.

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"The treatment of gas gangrene still lies in adequate surgery of the initial wound - devitalized tissue should be excised, tension relieved, and the wound laid well open. Gas-gangrene serum (polyvalent) should be given in full doses despite the introduction of chemotherapy with which, however, it should be combined. In the treatment of an established case, excision of the affected muscles, or amputations, should be carried out, sulfathiazole should be administered by mouth and locally, and massive doses of polyvalent gas-gangrene serum up to 40,000 units and repeated, should be given in a continuous intravenous saline-glucose drip.

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"Early amputation of a mangled limb can save life. Save all you can of a limb; never attempt a finite amputation in the forward area - they all go septic. A below-knee amputation at the site of election which goes septic means either an unsatisfactory stump or reamputation in the thigh; and sepsis in the latter, which could have been avoided, is a tragedy.

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One of the greatest virtues of plaster is that it keeps people out, for it is surprising how few can resist taking down other people's dressings - even when there is no indication to do so.

"All plaster casts should be split before evacuation (not bivalved); this allows for swelling, removes any risk of pressure gangrene, and allows of easier removal (if required) in the absence of plaster cutters. Do not cut

windows in plaster applied to a freshly injured limb, for this always leads to 'herniation' of the underlying tissues.

"Do not apply skin-tight bandages, wet or dry, to the limb beneath plaster to keep hairs from sticking; if the limb swells, the bandage can do as much harm as the plaster. Smooth the hairs down with plenty of soft paraffin if the limb cannot be shaved. This has the added advantage that the healthy skin is protected from infection by the discharge from the wound.

"For evacuation the following information should be printed on the plaster with an indelible pencil:

1. Date of wound, e.g., 9/2/42.
2. Type of wound, e.g., S.W. cpd. Tib. Fib. (shell wounds with compound fracture of tibia and fibula).
3. Date of operation, e.g., 9/2/42.
4. What done and dressing, e.g., Wd. Toilet. S & V (wound toilet sulfonamide and 'Vaseline').
5. Rough drawing of the wound or fracture.
6. Unit at which treated.

"Always fix joints in the best functional position. In the case of the hand, the plaster should not extend beyond the palmar crease so that all the finger movements are free. The absolute necessity for keeping the digits free and mobile is not sufficiently realized: avoid by active and/or passive movements a 'frozen hand.'

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"The important thing in first-aid treatment of fractures is to stabilize them, for this in itself is a prime factor in overcoming associated shock. As long as the alignment is correct, the actual shortening is of little account, for it can afterwards be overcome by manipulation under anesthesia or by skeletal traction.

"Plaster-of-paris is the best stabilizing agent in fractures.

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"The prognosis for head wounds is not so gloomy as was thought. They travel well in the early stages but less well later or after operation. They should be treated conservatively, and if rapid evacuation is possible, they should be sent for treatment to a special center. No scalp wound should be sutured without proper exploration, therefore the regimental medical officer should do no more than remove the hair, clean the scalp, dust the wound with

sulfonamide and cover it with a dressing. Excision of scalp wounds should always be minimal.

"If the skull is involved, indriven depressed bits of bone should be removed, but an intact dura should not be opened unless it is obviously under tension due to blood clot and this tension is causing symptoms.

"If the dura is opened, treat the brain with respect; do not poke fingers or instruments into it. Only remove foreign bodies if they are obvious; do not hunt for them. Do not poke rubber drains into the brain. Close the scalp carefully, and if drainage is considered necessary, do it through a separate stab wound and use soft rubber. Sulfonamides should be applied only sparingly to the brain for they damage nerve tissue.

"X-rays and a sucker are essential for adequate brain surgery. The removal of indriven bone is more important than the removal of a metallic foreign body.

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"Wounds of the face should never be sutured under tension. They do best if left open, with at most one or two narrow-bite approximating sutures to hold any flap in position. Every bit of soft tissue that can be saved must be left.

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"The value of a gastrostomy and/or tracheotomy should be remembered. They can save life in injuries of the upper respiratory and food passages.

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"In dealing with chest wounds be conservative. Sucking chest wounds should be closed, and unless they are small, this is better done with an overstitched pad covered with (petrolatum) gauze than by pulling skin and muscle together under tension, for sepsis always follows. Never hunt for foreign bodies in the chest in the forward area.

"Beware of pressure phenomena. The cause can be ascertained with a syringe and needle. Either blood will be sucked out or air will force the plunger back, and if the syringe contains some sterile water, the air will bubble through it.

"Unless of minor degree, chest cases should not be evacuated until fit. Do not be afraid of using morphine for a chest casualty.

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"The time factor is still paramount in wounds of the abdomen. To operate more than 24 hours after wounding is of doubtful wisdom.

"After operation these cases should be held for the very critical first 7 days at least, if at all possible. Too early evacuation is in itself a cause of death.

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"Small puncture wounds of the colon may be closed, and the site of suture drained. With larger wounds it is safer to exteriorize the wounded loop and form a colostomy.

"Wounds of the small intestine should be closed if possible. Resection should only be resorted to if the blood supply of a segment is jeopardized, or suture of closely grouped wounds would result in gross stenosis. Small intestinal fistulae should be avoided.

"Suprapubic cystostomy should be done in all cases of spinal cord injury with paraplegia; for without exception they have have grossly infected bladders, whether treated by repeated catheterization or by transurethral drainage. One with an indwelling urethral catheter, had not only a cystitis but also a gangrenous urethra.

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1. Chemotherapy cannot supersede adequate surgery.
2. Beware of applying sulfanilamide to extensive raw areas (e.g. burns) for it is rapidly absorbed, and the concentration in the blood may become dangerous.
3. Nerve tissue can be damaged, so be cautious in its use in wounds involving or near nerves.
4. Anuria may follow, especially where fluid is restricted. This danger is least with sulfanilamide.

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"A 'shocked' patient who appears otherwise fit for surgery and does not respond to adequate resuscitative measures in one to two hours, or relapses, should be reviewed to find the cause for his non-response, e.g., internal or external hemorrhage, involvement of peritoneum or mangling of a limb.

"Transfusion should be early and adequate. There is a tendency to place too much reliance on a pint or less of blood or plasma. The aim should be an early restoration of the blood pressure (as measured by a sphygmomanometer)

to normal, and a pulse of good volume. In a proportion of cases the blood pressure will rise but not to normal, and here there is a danger that by waiting the golden opportunity for surgery may be lost. Patients who require transfusion before operation should be transfused during and after the operation. Relapses after the giving of the anesthetic alone are not unknown, apart altogether from those due to the operation.

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" 'Pentothal' is an ideal anesthetic for the forward area provided it is used intelligently." (Lancet, Nov. 27, '43.)

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Council on Pharmacy and Chemistry of A.M.A. Adopts Metric System: The Journal of the American Medical Association (December 4, 1943) announces that the Council on Pharmacy and Chemistry has decided that henceforth in all its publications it will give quantities and dosages exclusively in the metric system. Conversion tables will be provided in each volume.

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Principles Involved in the Care of Patients with Streptococcal Diseases: There are essentially two major problems in the handling of Naval personnel with hemolytic streptococcal infections: (a) treatment of the various manifestations induced by this bacterial agent; and (b) prevention of dissemination of this organism, which ordinarily gives rise to cross-infections and return cases. The present discussion is confined to the former.

Intelligent handling of patients with streptococcal infections requires first an appraisal of the following points: (1) Is the infection primary or secondary; (2) if primary, are the manifestations associated with the absorption of toxin or due to invasion of tissues; (3) if secondary, is the process in the cellulitis stage, has suppuration occurred or are the symptoms due to a hypersensitive reaction to an infection which has already subsided. Awareness of the variations in pathogenicity of hemolytic streptococci, a clear understanding of the natural history of the different types of streptococcal infections and an evaluation of the character and stage of the disease process in the individual patient facilitate rational care of the protean manifestations of streptococcal diseases.

Most primary streptococcal infections are mild upper respiratory tract diseases which subside spontaneously in 3 to 5 days. Irrespective of the form of treatment, about 10 per cent of these infections give rise to complications, and no method has yet been found for preventing the development of these complications. Bed rest, forced fluid intake, warmth and supportive measures

probably insure the most rapid and complete recovery. If the local upper respiratory tract infection gives rise to severe toxic symptoms, there is a great temptation to administer serum or sulfonamides, and this is especially true in scarlet fever. Patients with scarlet fever have already absorbed erythrogenic toxin from the infectious agent. Sulfonamide will not modify the reaction of the patient to this toxin. A potent antitoxic serum will modify the reaction, but only if the available serum has neutralizing antibodies for the toxin elaborated by that particular respiratory pathogen. This holds true also for the efficacy of convalescent human serum which, furthermore, is always of low titer. Frequently, toxic symptoms are associated with dehydration and are promptly relieved by infusions of 0.9 per cent saline and 5.0 per cent glucose. A throat infection may also be caused, however, by a highly invasive strain which produces marked hyperplasia of lymphoid tissue, edema and peritonsillar swelling. In essence, such a lesion is a local cellulitis and the symptoms associated with this marked inflammatory reaction are amenable to sulfonamide therapy.

This invasive tendency is characteristic also of the relatively rare, severe primary infections, such as lymphangitis, erysipelas, cellulitis, etc. The natural history of these infections is bacterial multiplication, spreading and invasion of the blood stream. Sulfonamide therapy will prevent multiplication of the bacterial cell; prompt and intensive chemotherapy may well be a lifesaving measure under these conditions.

The treatment of secondary infections is complicated by the fact that purulent exudates act as sulfonamide inhibitors. The effectiveness of chemotherapy will therefore depend on the character and the age of the lesion. Early in the course of suppurative processes, when the invasion of tissue is the predominant factor and before the formation of pus, chemotherapy can be expected to be highly effective. This is most striking in cervical lymphadenitis, otitis media, early mastoiditis and pneumonia. When, however, the suppurative process is well established, the quantitative balance between the sulfonamide effect and the local antagonistic effect of purulent exudates is in favor of the latter. It is for this reason that drainage is indicated for abscesses, purulent otitis media and mastoiditis, empyema, etc. With the establishment of drainage, the lesion is relieved of sulfonamide inhibitors, and chemotherapy is then highly effective in preventing the spread of infection and perhaps also in the healing of the disease process.

Streptococcal diseases associated with hypersensitivity occur about one to three weeks after antigen has been absorbed from a primary infection. To attack these diseases by treating the precipitating infection is comparable to repairing a defective chimney flue when a house is ablaze. Attention must be directed to the particular hypersensitive reactions of the host. A severe epistaxis may require prompt cauterization; whereas erythema nodosum will

subside spontaneously and promptly if the affected part is elevated. The fact that hematuria is so often the presenting sign in acute nephritis has tended to focus attention on the kidney. It is important, however, to bear in mind that the changes in the glomerular capillaries are only a part of the many manifestations of capillary damage throughout the body, as evidenced by epistaxis, pulmonary and cardiac involvement, transitory localized accumulations of edema and edema of the brain. Perhaps the most important manifestation with respect to the care of the patient may be cerebral edema. This develops rapidly and early recognition of this phenomenon and appropriate treatment with infusions of hypertonic fluids may be lifesaving. When the capillary changes in the glomeruli are marked, varying degrees of renal insufficiency may supervene, but this insufficiency barely reaches a degree that is dangerous to life. Acute nephritis customarily subsides with bed rest.

When secondary streptococcal infection persists after the development of acute nephritis, there is no contra-indication to treating this infection with sulfonamides. This is not true, however, for rheumatic fever. Either manipulation of tissues of the upper respiratory tract such as tonsillectomy or the administration of sulfonamides during rheumatic fever will probably increase the activity of the rheumatic process and may cause a fatal exacerbation in an individual with mild symptoms. Rational handling of the rheumatic patient entails (a) suppression of disease activity and (b) protection of the myocardium. To effect the former, a therapeutic program for the administration of salicylates adequate to assure a prompt return of the blood sedimentation rate to within normal limits is indicated. The latter objective can be attained only through bed rest until the disease has become quiescent and reparative processes have advanced to a degree that the demands of an ambulatory life will not exceed the available myocardial reserve. (A.F.C.)

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Health Precautions for Personnel on Detached Duty: The Bureau's Division of Preventive Medicine has prepared a 31-page booklet on Health Precautions for Personnel on Detached Duty. In the booklet there are outlined 25 sets of precautions, each set being applicable to the prevention of one specific disease such as malaria, filariasis or dengue. For reference purposes there is included at the beginning an alphabetical list of the countries of the world with the precautions necessary in each country designated by number. For example, Tasmania carries the designations (6) and(15a) which refer to precautions against echinococcus disease, and against louse-borne relapsing fever. Copies are available from the Bureau upon request. (D.F.S.)

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The Sternum as a Route for Parenteral Fluid Therapy: Where it is essential that fluid be introduced rapidly into the circulation, and the intravenous

route is not available, resort may be had to the intrasternal route. It may be necessary to combat shock by means of the administration of intravenous fluids in patients with collapsed veins or with such extensive burns or injuries of the extremities that the customary sites for intravenous injection cannot be used.

It has been shown conclusively that fluids administered intrasternally are absorbed into the general circulation as rapidly as when given intravenously. There is little if any reaction about the injection site; the patient has the use of all extremities and is less inconvenienced by the sternal than by the venous puncture. The sternal needle may be left in situ for periods as long as five to seven days without discomfort or clotting.

Anatomically, the sternum is largest at the upper end of the body where it joins with the manubrium and there presents the greatest space for receipt of parenteral fluids. Needles of various kinds may be used, and there are available commercially many specially constructed needles with guards. However, a styleted needle of 13 to 15 gauge with a short bevel has proved quite satisfactory. A small hemostat placed 1/2 to 3/4 inch from the end acts as a satisfactory guard.

Through a small wheal of 1.0 per cent novocain, an incision is made in the skin to admit the needle which is inserted with a slight twisting motion through the anterior plate of the body of the sternum. The needle should point cephalad and should be inserted about two fingers' breadth from the manubriosternal junction. As soon as the needle is in place, the stylet is removed and aspiration is done with a 5 c.c. syringe to assure the operator that he has the needle correctly placed. Then the needle is washed out with 1 or 2 c.c. of normal saline, connection is made with the intravenous fluid set-up, and the needle is secured in place with small gauze pledgets and adhesive tape. Speed of injection is relatively the same as by the intravenous route. All fluids suitable for intravenous therapy may be given via the sternal route. Should the needle become plugged at times, it may be cleared by washing through with 2 to 5 c.c. normal saline with the aid of a syringe. (S.K.E.)

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Poisonous Reptiles of the World: The Bureau has procured from the Smithsonian Institution a few copies of a 37-page brochure on the "Poisonous Reptiles of the World," by Doris M. Cochran. It includes 34 illustrations along with descriptions of the main species and an appendix summarizing first-aid treatment, discussing the preparation of antivenin, and outlining directions for making scientific collections. A limited number of copies are available upon request from the Bureau. (D.F.S.)

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Recent Developments in Intravenous Anesthesia: The following article by Commander Richard B. Phillips (MC), USNR, Anesthetist, U.S. Naval Hospital, N.O.B. Norfolk, Virginia, is reproduced from the Atlantic Fleet Medical News Letter, No. 11-43:

"Intravenous anesthesia is now being used at the various world battle-fronts as much as all other types of anesthesia combined.

"There are several technics for using intravenous anesthesia, but I shall describe one which I have used in 3,000 cases with great success, which is patterned after that devised by Lundy in 1934. It is better to use the 2.5 per cent solution of pentothal, and to stick to it, rather than switch from strength to strength. There are several devices to hold syringes and to maintain continuous intravenous drips, etc., but I feel sure that if one will confine oneself to the simple technic which I am about to describe that a minimum of difficulty will be encountered.

"Pentothal comes in 1 Gm. or 0.5 Gm. ampoules, as a whitish-yellow crystalline powder. It may also be obtained from the Abbott Company in 5 Gm. ampoules. The material needed to mix up a one-gram ampoule is as follows:

1. One 1-Gm. ampoule of sodium pentothal.
2. Two 20 c.c. glass syringes.
3. Two intravenous needles, one No. 19 and one No. 18. (No. 20 gauge needles may be made to serve. - Ed.)
4. Alcohol or other skin cleansing agent.
5. Several sponges.
6. Saw to cut ampoule.
7. Armboard, and towel to place around wrist, so as to keep hand and arm extended.
8. About 50 c.c. of distilled water.
9. Rubber tourniquet or tube.
10. 50 c.c. glass beaker.

Technic for Mixing Solution: (2.5 per cent)

"Break the ampoule containing the 1,000 mgm. of pentothal, introduce 20 c.c. of distilled water into it dissolving the crystals; this will give a 5 per cent solution of pentothal. Place this in the empty glass beaker, and add 20 c.c. of distilled water. This will then give 40 c.c. of water containing 1,000 mgm. of pentothal, or a 2.5 per cent solution with 25 mgm. per c.c. Take up 20 c.c. of this solution into each of the 20 c.c. syringes; you will then have 500 mgm. in each syringe.

Technic for Inducing Anesthesia:

"There is some difference in the amount of 2.5 per cent pentothal needed for inducing anesthesia; this depends upon the size and strength and age of the patient, and upon the severity of the surgery to be carried out. As a rule I introduce 5 c.c. into the median cubital vein within ten seconds and then ask the patient to start counting, slowly and evenly. One can tell fairly well about what will be required in a given case by the amount of drug necessary to put the patient to sleep. Ordinarily 8 to 10 c.c. will put a patient to sleep who has been properly pre-medicated, and where possible I always use morphine and atropine 45 minutes prior to operation. The patient who is wide awake will require considerably more pentothal, perhaps as much as double the usual amount. After the patient is asleep, he is not yet ready for surgery, but should receive from 4 to 8 c.c. more within the following one to three minutes, or perhaps more, up to say a total of from 14 to 25 c.c. before surgery is begun. Only short operations such as opening of an abscess, draining of a felon, etc., can be done with less than 500 mgm. When possible pentothal should be used for operations where deep relaxation is not required, as for example in manipulations, painful dressings, setting of fractures of certain types, excision of skin tumors or biopsy, suturing of lacerations, curetting of osteomyelitis, extraction of teeth, amputation of fingers or toes, and for numerous other operations of short duration which require only moderate relaxation. It is true that pentothal has been used a great many times for major operations, including leg amputations and abdominal surgery, but where spinal or ether can be used, their use is to be preferred. Pentothal has even been used in operations involving the lung with some considerable success according to several writers.

"The cardinal signs to watch in this type of anesthesia are: (1) relaxation, (2) respiration, (3) color.

"As I have said, full relaxation is not needed for many operations, and if the patient moves a little and not enough to interfere with the surgeon, then it is probably better for the patient not to be too deeply depressed. Watching the respiration is a most important way of telling the depth of anesthesia. When fully anesthetized and ready for surgery, the breathing will be almost wholly abdominal and quite shallow as a rule. Frequently the stimulus given by surgery will increase the rate and depth of respiration. The patient may develop slight to moderate cyanosis, and almost certainly will when he is deeply under. Reports have come in of patients having received up to 5,000 mgm. of pentothal, and I have myself given one patient (a chest case) 3,400 mgm. without untoward event excepting for a long depressed sleep following the surgery. One should have oxygen available if possible to administer when or before breathing gets shallow, but this is not possible under battle-front conditions and will have to be dispensed with in many cases. One should also try to get picrotoxin or metrazol for use to stimulate respiration when it becomes shallow. Artificial respiration has to be resorted to only in extreme cases, perhaps in 1:1,000, at

least that has been my experience. Always see that the patient has a free airway, and keep the chin up. If necessary, introduce a pharyngeal airway, as there is always a tendency for the tongue to fall back and partially block the airway.

"One should keep the needle in the vein with one's fingers and introduce more pentothal solution from time to time, every one to three minutes or so, depending upon circumstances.

"Those who first begin to use pentothal use too little rather than too much of it. It must be remembered that the above notes are to give one a general idea of how to use intravenous anesthesia - every case must be handled in the light of one's past experience, but do not forget that two patients having the same surgery, and having the same age and build, may vary widely in the amount of pentothal that each will require."

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Spinal Anesthesia: Many technics and many agents are used for producing spinal anesthesia. Meticulous attention to detail is most important. Never try to combine a detail of one technic with another technic without due consideration. Variations in the length of action, toxicity and specific gravity of solutions of the several drugs make imperative an individual technic for each agent.

Use of Procaine Hydrochloride:

Dosage: Average is 1 mg. per pound of body weight (total dose should never exceed 200 mg.). Factors modifying dosage:

1. Old and debilitated patients often require less.
2. Young and vigorous ones may require more.
3. The longer the operation the larger the dose.
4. The higher the operation the larger the dose.

Site of Injection: One of the lumbar interspaces should be used to avoid possible injury to the spinal cord by the needle. For operations in:

1. The upper part of abdomen - 1st lumbar space (solution may be injected with the bevel of the needle directed upward).
2. The lower part of abdomen - 2d lumbar space.
3. Perineum and below - 3d lumbar space (solution may be injected with the bevel of the needle directed downward).

Rate of Injection: The fiffusion of the solution of procaine hydrochloride in the spinal fluid is influenced by the rate of injection - the faster the injection the further the solution diffuses.

Volume: Concentrated solutions result in (1) longer anesthesia, (2) greater relaxation and (3) possible permanent damage to nerve tissue. (A solution of procaine hydrochloride stronger than 10 per cent must not be used.)

Dilute solutions result in (1) shorter anesthesia, (2) less relaxation and (3) less damage to nerve tissue.

The larger the volume injected the greater the distribution in the spinal fluid.

Dosage and Dilution of Procaine Hydrochloride in Spinal Anesthesia*

Operation	Lumbar Vertebrae Between Which Injection Is Made	Dose of Procaine Hydrochloride (Mg.)	Total Volume of Procaine Solution & Spinal Fluid
Hemorrhoidectomy	3 and 4	50 to 100	2.5 c.c.
Perineal prostatectomy	3 and 4	80 to 120	2.5 c.c.
Herniorrhaphy	2 and 3	120 to 150	3.5 c.c.
Appendectomy	2 and 3	120 to 150	4.0 c.c.
Operation for ruptured duodenal ulcer	1 and 2	120 to 175	6.0 c.c.
Cholecystectomy	1 and 2	150 to 200	6.0 c.c.

*A spinal needle, gauge 20 to 22, is used. The rate of injection is 0.50 c.c. each second. (Fundamentals of Anesthesia, prepared by Subcommittee on Anesthesia, National Research Council, 1942.)

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In addition the following points should be stressed: Generally four factors govern height of anesthesia: (1) level of spinal puncture; (2) force (rate) of injection; (3) amount of solution and dose injected; (4) the position of the patient: if a solution of greater or lesser specific gravity than spinal fluid is used, the height of anesthesia can be regulated by tilting the table. This factor need not generally be taken into consideration unless a marked hypo- or hypertonic solution is used.

To be certain anesthesia is going to be adequate, one must have a free flow of spinal fluid at the beginning and end of puncture and not have bloody fluid on aspiration.

Absolute contra-indications to the use of spinal anesthesia are: shock (unless well controlled), marked debilitation of patient, C.N.S. disease, and infection at sight of puncture.

All patients must be carefully watched for a possible fall in blood pressure, too high a level of anesthesia or any idiosyncrasy to the drug. These complications generally occur in the first thirty minutes of anesthesia. (T.M.)

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Methods of Reducing the Amount of Drinking Water Required by Survivors of Shipwreck: Visscher has pointed out the efficiency of the procedure of wetting the clothing in removing heat from the body which otherwise could be lost only by evaporation of body water; the water applied to the clothing and subsequently evaporated from it is substituted for sweat. Gamble and Butler working under a contract with the Committee on Medical Research of the Officer of Scientific Research and Development have made a detailed field study of the rate of evaporation of water from the bodies of subjects on life rafts exposed to the summer sun. They have pointed out that "extra-renal water loss", a term practically synonymous with evaporative water loss, may be reduced to the basal level by exposing the body to any breeze that might be blowing, by providing shade without interfering with the breeze, and by keeping the subject's clothing wet and the body cool to a point beyond complete comfort but not across the margin of chilliness. These investigators pointed out that under severe conditions a combination of these technics may be necessary to maintain evaporative water loss at a minimum. The hourly extra-renal water loss during the six midday hours may be reduced to 1/10 of what it would be otherwise by application of these measures of which the procedure of wetting the clothes appears the most efficient. Associates of Adolph have recently conducted similar tests on life rafts; while the complete report is not as yet at hand, it is understood that evidence was obtained which strongly supports the effectiveness of shade and wet clothes in reducing evaporative water loss.

The evidence presented by Gamble and Butler demonstrates that at least 1,500 c.c. of body water per day can be lost unnecessarily during calms in tropical waters owing to failure to take steps to reduce evaporative body water loss to a minimum. Under such conditions of weather, a survivor having no drinking water but making every effort to minimize evaporative water loss from his body would maintain himself in better physical condition than survivor drinking the very generous quantity of 1,000 c.c. (1 quart) of water a day but taking none of the precautions referred to above. Methods of conserving body water can thus play a more important part in prolonging survival than does a supply of generous amounts of drinking water on lifeboats and rafts.

Recommended Procedures for Maintaining Daily Requirement of Drinking Water at a Minimum: (a) Remove (but do not discard) all clothing save the headgear, shirt, trousers and socks, which are necessary for protection against sunburn. (b) Refrain from unnecessary exertion. (c) Achieve maximum cooling through convection by so disposing oneself in the craft as to expose the clothed

body to the breeze to as great a degree as possible. (d) Rig an awning which will protect against the sun but so designed as not to interfere with the cooling effect of the breeze. (There is a possibility that awnings may be made standard equipment on rubber life rafts.) (e) Keep shirt and trousers constantly wet with sea water, the evaporation of which cools the body. Careful observance of procedure (e) is particularly indicated when no breeze is blowing and evaporation water loss from the body is likely to be maximum. Whatever means of applying sea water to the clothing is adopted, the clothing should be thoroughly rinsed in sea water at least once daily to prevent accumulation of salt. The clothing should be dried as far as possible in the late afternoon to prevent over-cooling at night.

These procedures should be followed during the daytime by survivors in any latitude in which consideration of the air temperature does not render it obvious that such an action would make them cold. If survivors carry out these procedures only when they feel hot or when sweat is observed upon their bodies, the water requirement will not be maintained at a minimum. Procedures (a), (c) and (e) should not be followed at night. Once initiated for the daytime, all the procedures should be followed constantly unless a sensation of chilliness supervenes, when they should be temporarily discontinued. In the event of chilliness, procedure (e) is the first which should be temporarily suspended.

BIBLIOGRAPHY:

Visscher, M. B.; Personal communication.

Gamble, J. L., Butler, A. M.; As responsible investigators in OEMcmr Contract No. 364, Monthly Progress Report No. 2.

Adolph, E. F., and others; As responsible investigators under OEMcmr Contract No. 206, Monthly Progress Report No. 8 under this Contract states that data on raft tests will appear in Interim Report No. 13.

(Quoted from addendum to Report No. 3, Research Project X-127, Lt. P. H. Futcher MC-V(S), USNR; Lt. W. V. Consolazio H-V(S), USNR; Lt. Nello Pace H-V(S), USNR; N.M.R.I., Bethesda, Maryland.)

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Dehydrated Base for "Combination" Blood Agar: A dehydrated base* for the preparation of a "combination" blood agar has been devised by Lt. E.P. Casman (MC), USNR, in the Bacteriology laboratory at the U.S. Naval Medical School, Bethesda, Maryland. It permits the preparation of one medium having the growth-promoting properties of heated (chocolate) blood agar and permitting the detection of hemolysis and also the green coloration produced by pneumococci and alpha streptococci. It is superior to "chocolate" blood agar for the isolation of N. gonorrhoeae. It can be used with the "candle jar" incubation technic. It allows a marked simplification of the bacteriology of the diagnostic laboratory.

The base contains:

p-amino-benzoic acid	0.005 per cent
Agar	1.5 " "
Beef extract	0.3 " "
Bacto Tryptose & Proteose Peptone #3	1.0 " "
NaCl	0.5 " "
Dextrose	0.03 " "
Dextrin	0.05 " "
Nicotinamide	0.1 " "

* *

Thiopeptone may be used instead of Tryptose-Proteose Peptone #3 combination.

To prepare the basic medium, combine the ingredients and dissolve by heating. Adjust the pH to between 7.4 and 7.5. Boil for a few minutes. If necessary, filter through paper. Dispense in flasks or tubes, autoclave at 15 pounds pressure for twenty minutes. Final pH should be 7.3.

To prepare the "combination" blood agar, melt the sterile base, add 5 per cent human or horse blood and heat at 85-90° C. for 5 minutes. Centrifuge while hot (2,500 r.p.m. for 2 to 3 minutes in heated centrifuge cups), and after cooling to between 45 and 50° C. add 5 per cent blood to the clear supernatant liquid. Since the coagulum forms a compact mass at the bottom of the container, the supernatant liquid need not be removed before the final addition of blood. Plates and slants are prepared in the usual manner.

*The complete medium in dehydrated form is being prepared by the Difco Laboratories of Detroit. When this becomes available, the preparation of the medium will be much more simple.

* * * * * *

Grain Itch: Workers in hay, straw or unthreshed grain have suffered at times from an itching, urticarial rash occurring sometime in the first 24 hours after exposure to these materials. Rogers reports the occurrence of several such cases and reminds us that the cause of the malady was discovered by Mr. George Newport of England in 1849 to be a mite similar to the acarus of scabies and known as the Pediculoides ventricosus. Since the mite remains attached to the human skin only a short time anyway, the treatment does not need to involve killing the mite but merely relieving the itching and burning. This can be accomplished by warm demulcent baths and antipruritic lotions. Prevention of the pest is to be sought through (a) burning of the grain stubble

during the fall or spring, (b) control of the grain moth on which the mite apparently lives as an ectoparasite, (c) dusting lofts, barns and granaries with powdered sulphur. (J.A.M.A., Dec. 4, '43.)

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Prognosis in Prolonged Unconsciousness following Head Injury: Hawkes has recently studied a series of 224 patients with unconsciousness following head injury with a view to determining the prognostic significance of prolonged unconsciousness. The statistics regarding mortality are as follows:

Period of Unconsciousness	No. of Cases	Deaths	Mortality (Per Cent)
Less than 24 hours	181 (81%)	13	7.5
24 to 48 hours	10 (4.5%)	7	70.0
48 to 72 hours	3 (1.5%)	2	67.0
Greater than 72 hours	30 (13%)	5	17.0

* *

In the thirty patients in whom unconsciousness persisted longer than 72 hours the general mortality was 17 per cent. Among these 30 cases 21 were non-operable, 6 were operable and 3 complicated. The mortality rates were 9.5, 33, and 33 per cent respectively. When the whole group of 224 patients was so divided, the mortality for the non-operable cases was 7.5 per cent, for the operable cases, 50 per cent, and for the complicated cases, 25 per cent.

When an unconscious patient has survived the first critical 72 hours following craniocerebral injury, the prognosis both for survival and for recovery with little or no residual damage is good.

Treatment of cases with prolonged unconsciousness should be conservative, providing adequate fluid and nutritional supply. Care should be taken to ward off either intracranial or general infection. Operative intervention should not be undertaken on the basis of prolonged unconsciousness alone.

Persisting unconsciousness may mask the presence of such complications as extradural or subdural hemorrhage, brain abscess, etc. A careful record of the temperature, pulse, respirations and blood pressure plus frequent neurological examination will reveal their presence in adequate time for operative treatment.

Cases in which consciousness is regained and is lost again do not belong in this group; such patients are candidates for immediate surgical exploration. (Am. J. Surg., Dec. '43.)

* * * * * *

Blood Pressure Differences in the Right and Left Arms: Amsterdam and Amsterdam have made a study of blood pressure disparities between the two arms and find that they are very common in both normal and hypertensive individuals. The right brachial systolic blood pressure was higher than the left in 70 per cent of normals and in 84.4 per cent of hypertensives. In only 6.4 per cent of normals and 4.9 per cent of hypertensives was the left brachial systolic pressure higher than the right.

In those normal individuals in whom the systolic pressure in the right arm was higher, the disparity was more than 10 mm. in 44.6 per cent and more than 20 mm. in 12.1 per cent. In those individuals whose left-arm systolic pressure was higher, the disparity was usually slight.

In the hypertensive group similar differences were found, the disparity where it occurred tending to be slightly greater and to vary somewhat with the degree of hypertension.

Differences in the diastolic pressure between the two arms were present in normal and hypertensive individuals, but they were less marked. (New York State J. Med., Dec. 1, '43.)

* * * * * *

Organizational Changes in Bureau of Medicine and Surgery: Several important changes in the organization of BuMed were approved by the Surgeon General during November, effective immediately.

The most significant change is provided for in a directive dated November 10, 1943, establishing a Materiel Division of BuMed. This new Division is assigned cognizance of all supply and maintenance functions of the Medical Department. While this Division has been established as a Bureau rather than as a field activity, the offices of the Chief of the new Division, Rear Admiral K.C. Melhorn, (MC), USN, and of the Assistant Chief, Captain J. H. Chambers (MC), USN, will be located for the duration of the war on the premises of the Naval Medical Supply Depot, Brooklyn, N.Y. The five branches of this Division - Requirements, Procurement, Stores Control and Warehousing, Accounting, and Administrative - also have been located in Brooklyn and have been staffed almost completely with personnel previously on the rolls of the Brooklyn Depot. A Washington office of this Division has been established to represent the Chief of the Division in necessary personal contacts with other divisions, bureaus, offices and agencies in the environs of Washington. This office is headed by Captain W.E. Eaton (MC) USN.

Coincident with the establishment of the Materiel Division, revision was made of the organizations of the Planning and Finance Divisions. The Materiel

Requirements, and Priorities and Allocations sections of the Planning Division have been abolished as a result of the transfer of their functions to the Materiel Division, and the remaining sections have been organized under two branches, a War Plans Branch and a Design and Construction Branch. The Finance Division was realigned into a Budget Branch and an Auditing Branch. The former includes a new Budgetary Control Section which is concerning itself primarily with the development of operational standards for the various classes of Medical Department expenditures and with control of the flow of funds throughout appropriational periods. The Auditing Branch includes two new sections, a Property Section to develop and maintain records of values and descriptions of all Medical Department property, and a Technical Training Section to train Hospital Corps personnel in accounting procedures preparatory to field duties. The Procurement Section and the Public Works Unit of the Budget Section have been abolished as a result of the transfer of their functions to the Materiel Division.

Another directive issued by the Surgeon General on November 3, 1943, provided for the functional reorganization of the Administration Division. Lt. Comdr. Arnold F. Emch, H-V(S), USNR, Special Assistant to the Surgeon General, was also appointed Chief of the Administration Division. The functions performed by this Division prior to its reorganization are to be found, along with some additions, in a Services Branch of the new Division, while the Division has been considerably expanded to include also a Management Branch, a Personnel Branch, and a Security Branch.

A Post-War Planning Board was established in a directive issued by the Surgeon General on November 13, 1943. This Board is primarily concerned with the development of a program for post-war disposition of Medical Department property, facilities, equipment and supplies, and for the correlation of this program with over-all Navy plans. Captain W.E. Eaton (MC), USN, is serving as Chairman of this Board as well as head of the Washington office of the Materiel Division. All divisions in BuMed having a direct interest in the problems to be considered by the Board will be included in the Board's membership.

Copies of directives setting forth in detail the organizational structure and functional responsibilities of each of the divisions and boards concerned in these reorganizations will be sent upon request. (A.F.E.)

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(The following articles are reprinted from the Medical Supply News Letter, No. 11-43, N.M.S.D., Brooklyn, N.Y.)

Medical Stores, Narcotics, Loss of: (A) Recently the USS _____ reported as follows on the loss of morphine syrettes:

"While in Los Angeles Shipyards, San Pedro, California, for alterations, the first-aid boxes distributed around the ship were broken into between the dates of September 24 and 26 and eighteen packages (of five each) of morphine syrettes removed.

"This is believed to be the work of some civilian worker. Report was made to the senior Naval Officer in charge of alterations at the yard. Advise if any action is to be taken by us with the Bureau of Internal Revenue."

(B) In reply the ship was advised as follows:

Ref: (a) Art. 1194 & 1218, NR
(b) Para. 738 & 3074, MMD
(c) Art. 194, Treasury Department, Bureau of Narcotics, Regulations, No. 5, dated 6-1-38.

1. Article 194, Treasury Department, Bureau of Narcotics Regulations No. 5, dated 6-1-38, prescribes certain reports to the narcotic district supervisor in the case of loss or destruction of narcotics. Art. 194 is quoted in full, as follows:

"ART. 194: PROCEDURE IN CASE OF LOSS: - Where, through breakage of the container or other accident, otherwise than in transit, narcotics are lost or destroyed, the person having title thereto shall make affidavit as to the kinds and quantities of narcotics lost or destroyed and the circumstances involved, and immediately forward the affidavit to the narcotic district supervisor. A copy of such affidavit shall be retained and filed with the other narcotic records. See appendix for list of narcotic district supervisors, their headquarters and States embraced.

"Where narcotics are lost by theft, or otherwise lost or destroyed in transit, the consignee shall immediately upon ascertainment of the occurrence file with the narcotic district supervisor, a sworn statement of the fact, including a list of the narcotics stolen, lost or destroyed, and documentary evidence that the local authorities were notified. A copy of the sworn statement shall be retained and filed with the other narcotic records of the consignee.

"A loss in transit does not authorize a vendor to duplicate a shipment on the same order form. A separate order form covering each and every shipment of narcotics is required."

2. References (a) and (b) are stated for information.

3. Properly to safeguard medical stores it is recommended that all first-aid kits, particularly those containing narcotics, be routinely removed to a secure place prior to entering any port outside of active combat area and re-distributed after departure.

FIELD ORGANIZATION - BUREAU OF NARCOTICS
July 1, 1943

DISTRICT	TERRITORY	HEADQUARTERS OFFICE	DISTRICT SUPERVISOR
1	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont	1120 Post Office Building Boston 9, Massachusetts	William E. Clark
2	New York State & the 5th Int. Rev. Collection District of New Jersey	253 Broadway, Room 200 New York 7, New York	Robert W. Artis
3	Delaware, New Jersey & Pennsylvania (except the 5th Int. Rev. District)	1304 Gimbel Building Philadelphia 7, Pennsylvania	Terry A. Talent
5	District of Columbia, Maryland, No. Carolina, Virginia and West Virginia	417 Munsey Building Baltimore 2, Maryland	Boyd M. Martin
6	Alabama, Florida, Georgia and South Carolina	501 Ten Forsyth Street Bldg. Atlanta 3, Georgia	Thomas W. McGeever
7	Kentucky and Tennessee	418 Federal Building (PO Box 537) Louisville 1, Kentucky	George W. Cunningham
8	Michigan and Ohio	802 Federal Building Detroit 26, Michigan	Ralph W. Cyler
9	Illinois, Indiana & Wisconsin	817 New Post Office Building Chicago 7, Illinois	James J. Biggins
10	Louisiana, Mississippi & Texas	717 Federal Office Building (PO Box 4090) Houston 14, Texas	T. E. Middlebrooks
11	Arkansas, Kansas, Missouri and Oklahoma	743 U.S. Courthouse Building Kansas City 6, Missouri	Joseph Bell
12	Iowa, Minnesota, Nebraska, North Dakota and South Dakota	130 Federal Office Building Minneapolis 1, Minnesota	Allyn B. Crisler
13	Colorado, New Mexico, Utah and Wyoming	100 U.S. Customhouse Denver 2, Colorado	Mrs. Elizabeth Bass
14	Arizona, California and Nevada	1028 Empire Hotel Building San Francisco 2, California	Joseph A. Manning
15	Idaho, Montana, Oregon, Washington and Territory of Alaska	311 U.S. Courthouse Building Seattle 4, Washington	Anker M. Bangs
16	Territory of Hawaii	575 Alexander Young Building (PO Box 3285) Honolulu 1, Hawaii	Wm. K. Wells, Acting

Wrapping Twine, Conservation of: For the information and compliance of all concerned the following letter is published:

WAR PRODUCTION BOARD
Washington, D. C.

Conservation Division
1100 H Street, N. W.

November 19, 1943

Dear Sir:

Subject: Wrapping Twine Conservation

The situation relating to wrapping twine of all types is becoming increasingly critical. Besides raw material shortage, demands on facilities and labor for production of articles more directly associated with the War Effort - such as rope for the Armed Forces - have diverted production so that normal wrapping twine demands cannot be filled.

To offset this shortage the War Production Board has asked industrial users to conserve twine by proper tying, and to salvage twine for re-use. This program is under way. Twine can and must be used more than once.

It will be necessary for all government departments who use wrapping twine to do likewise.

Supplies are not and will not be available to permit free and unrestricted use of wrapping twine. Therefore, we urge that you make every effort to save and conserve twine. Please see that these suggestions are observed by all under your jurisdiction:

1. Cut down the number of wraps. Often two to three times the number of wraps needed have been used.
2. Attempt to obtain the right twine to do the job. Reduce the weight used whenever possible.
3. Study your particular problem and instruct tiers to use knots that are firm but easily untied. The twine can be used again.
4. Salvage twine for re-use by untying all twine from incoming packages. Wind the salvaged twine on a reel for re-use in future shipments.
5. Dont' throw twine away. When worn out, salvage it through usual channels for conversion into paper.

Your cooperation will help prevent a serious twine shortage for the entire country.

/s/ HOWARD COONLEY,
Director, Conservation Division

BUMED-X-JRC-1b
P3-2(114)

20 Dec 1943

To: All Ships and Stations.

Subj: Benzedrine Sulfate; tactical and emergency use of.

Ref: (a) Ltr ChBuMed to all Medical Officers: Benzedrine Sulfate; procurement, dosage and effects of, P3-2(114), dated 18 Dec 1943.

1. Benzedrine (racemic amphetamine sulfate) is now available and may be procured by medical officers in accordance with ref. (a). This drug is regarded as the most satisfactory of a group of stimulants which have been used in certain tactical and emergency situations in the present war. In states of severe or extreme fatigue this drug, in suitable doses, temporarily removes the desire for rest and sleep and produces feelings of self-confidence and well-being. It also produces improvement in the performance of skilled acts during states of severe fatigue. It can, therefore, enable persons to carry on efficiently for a time when their performance would normally be impaired or they would be unable to remain awake.

2. Excessive or unduly prolonged use of this drug can produce unfavorable effects. It is therefore essential that all personnel who may be responsible for the administration of benzedrine to themselves or others be thoroughly familiar with the proper dosage and limitations of usefulness of this drug. The dissemination of this information is the responsibility of medical officers. The attention of medical officers is directed to ref. (a) which summarizes this information.

3. The operational use of benzedrine shall be limited to specific tactical or emergency situations and decision as to such use shall be arrived at by consultation between commanding and medical officers. Medical officers will be responsible for the custody of supplies and the supervision of administration and dosage. Operations in combat areas may, however, give rise to situations in which the use of benzedrine would be advantageous at times and places when a medical officer is not available. Such conditions may be met by placing the necessary supplies under the custody and supervision of unit commanders.

4. The following are examples of tactical and emergency situations in which the use of benzedrine may be indicated:

(a) Tactical operations in which the highest possible efficiency is necessary for a total of not over 24 hours beyond the onset of severe fatigue. Such

tactical plans must include a rest period of at least 12 hours following the prolonged activity. Tactical situations fulfilling these requirements may occur in naval and marine forces during raids or the establishment of beach-heads and possibly also in some operations at sea. In such operations the time of administration and dosage of benzedrine should be written into the tactical orders after consultation with medical officers and the drug will then be supplied to unit commanders in appropriate quantities.

(b) Flying personnel may experience severe fatigue during the return from prolonged patrol or bombing missions. Under such circumstances pilots and others have shown dangerous impairment of skill or inability to stay awake. When such conditions are expected medical officers may issue benzedrine to flying personnel with instructions as to proper dosage.

5. For operational situations in which the use of benzedrine may be justified after consultation between commanding and medical officers, the use of the drug shall be governed by the following conditions:

(a) Not to be employed in situations or emergencies which may continue more than 24 hours after the appearance of severe fatigue.

(b) Officers and men in key positions in which good judgment and the making of decisions outweighs the allaying of fatigue, not over 5 mg., single dose, repeated no more than 3 times at intervals of 6 to 8 hours.

(c) For allaying sleepiness and fatigue, all other men, not over 10 mg., single dose, repeated no more than 3 times at intervals of 6 to 8 hours.

--BuMed. Ross T. McIntire.

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BUMED-X-JRC-1b
P3-2(114)

18 Dec 1943

To: All Medical Officers.

Subj: Benzedrine Sulfate; procurement, dosage and effects of.

Ref: (a) Ltr ChBuMed to All Ships and Stations: Benzedrine Sulfate; tactical and emergency use of, P3-2(114), dated 20 Dec 1943.

1. As noted in ref. (a) benzedrine sulfate is regarded as the most satisfactory of a group of analeptic drugs which can enable personnel to continue performing

their duties efficiently for a time when they would normally be seriously impaired by extreme fatigue.

2. The subject named drug is available and may be procured from Naval Medical Supply Depots and Naval Medical Storehouses under the following designation:

Stock No.	Status	Item	Unit
S1-3991	T	RACEMIC AMPHETAMINE SULFATE, waxed paper package containing 6 tablets of 5 mg.	One (1)

3. The effects of benzedrine appear in about 1 hour after ingestion and continue for 6 to 8 hours. Single doses should not exceed 10 mg. Such doses should not be repeated more than 3 times at intervals of 6 to 8 hours, after which the need for sleep and rest is imperative. A total of 30 mg. should not be exceeded in any one week. For officers and men in key positions in which good judgment and the making of decisions outweighs the allaying of fatigue, not over 5 mg., single dose, repeated no more than 3 times at intervals of 6 to 8 hours.

4. Benzedrine sulfate, in moderate doses, does not produce serious adverse effects. Approximately 10 per cent of persons notice such symptoms as palpitation and feelings of tension or uneasiness after a moderate dose such as 10 mg. taken when not fatigued. These symptoms are less frequent when the drug is taken during severe fatigue. Following 10 mg. there is some increase of heart rate, and systolic and diastolic blood pressures, but these are too small to be regarded as important in healthy subjects. Benzedrine should not be administered to severely wounded men because it may increase hemorrhage. It produces some increase in sweating and in thirst, but it is not regarded as being contraindicated in extreme conditions of humidity, heat or cold. In excessive or unduly prolonged usage unfavorable symptoms are common. These include: headache, anorexia, abdominal cramps, constipation, dizziness, irregular heart action with tachycardia and palpitation, and numerous adverse mental reactions. Instances have also been reported of euphoria with excitement, overconfidence, impaired judgment and hallucinations following excessive dosage or continued use over too long a period. With continued over-use there have been instances of vasomotor collapse. In order to avoid the possibility of serious adverse reactions the dosage prescribed in paragraph 3 above must be strictly observed.

5. Benzedrine is not known to cause addiction in the sense of a craving for the drug. There are no withdrawal symptoms except a desire for rest and sleep. It is, however, possible to form a habit of depending on this drug to overcome moderate feelings of fatigue. Any supplies of benzedrine should be kept under lock and key and issued only under the immediate supervision of responsible officers who are familiar with its characteristics.

6. Benzedrine postpones but does not eliminate the need for sleep and rest. With continued use increasing doses are necessary in order to stay awake and adverse reactions become more common. It should not be employed in situations or emergencies which may continue more than 24 hours after the appearance of severe fatigue. This drug does not improve intellectual or psychomotor function when taken while in a normal state. There is no satisfactory evidence that it reduces or prevents seasickness or airsickness.

--BuMed. Ross T. McIntire.

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Public Health Foreign Report

Disease	Place	Date	Number of Cases
Dengue Fever	Honolulu, T.H.	Nov. 8, '43	927
Plague	Belgian Congo, Butakonda Lubero	Oct. 15,19, '43	7 (fatal)
	Morocco (French)	Sept. '43	3
Smallpox	Algeria	Sept. 21-30, '43	29
	Morocco (French)	Sept. '43	34
Typhus Fever	Algeria	Sept. 21-30, '43	14
	Hungary	Oct. 9-16, '43	21
	Morocco (French)	Sept. '43	63
	Rumania	Oct. 24-31, '43	46
	Slovakia	Oct. 9-16, '43	6
	Tunisia	July 21-31, '43	64
		Aug. '43	92
		Sept. '43	26
Yellow Fever	French Guinea	Oct. 29, 30, '43	2 (fatal)
	Senegal, Tambacounda	Oct. 28, '43	1 (fatal)

(Pub. Health Rep., Nov. 19, '43.)

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Form 111

CONTROL OF MALARIA VECTORS

THE MORE COMMON OR MORE GENERALLY TYPICAL BREEDING PLACES OF ANOPHELES MOSQUITOES TRANSMITTING MALARIA IN VARIOUS REGIONS AND THE PRINCIPAL CONTROL METHODS WHICH MAY BE EMPLOYED

Modified and Enlarged by Harold Farnsworth Gray from a Diagram Originally Devised by Sir Malcolm Watson
(Further Modifications by Division of Preventive Medicine, Bureau of Medicine and Surgery, U. S. Navy, 1943)

REGION	*Brackish water swamps, pools and marshes, usually open to sunlight*	*Fresh water swamps, usually open to sunlight*	*Fresh water swamps, pools, shaded. Water under jungle or swamp vegetation*	*Large rivers, fast or slow, grassy edges (stream bed pools)*	*Small streams, ditches, seepages, moderate current, grassy sides, clear water*	*Hill streams, free from grass, very slow current, clear water*	*Hill streams, free from grass, rapid current, clear water*	*Irrigation channels, with bays or pockets, grassy sides, average current*	*Shallow seepage, clear water, from irrigation or streams*	*Reservoirs, impounded water, ponds, bayous, lakes*	*Rain water pools, especially if containing algae. Rock pools*	*Springs, small pools, hoofprints*	*Rice fields*	*Open wells*	*Tanks in open air, or dark wells in houses*	*Artificial containers, cans, coconut shells, gourds, boats, etc.*
South Pacific Islands	A. punctulatus moluccensis	A. punctulatus moluccensis A. p. punctulatus	A. punctulatus moluccensis A. p. punctulatus	A. punctulatus moluccensis	A. punctulatus moluccensis	A. punctulatus moluccensis					A. punctulatus moluccensis	A. punctulatus moluccensis A. p. punctulatus				A. punctulatus moluccensis
Netherlands Indies	A. sundaicus A. subpictus		A. umbrosus (also in brackish water)		A. maculatus (in sunlight) A. barbirostris	A. minimus flavirostris A. maculatus (in sunlight)	A. maculatus (in sunlight) A. kochi	A. aconitus		A. kochi	A. subpictus (usually polluted)	A. leucosphyrus	A. aconitus A. hyrcanus sinensis			
Philippine Islands					A. minimus flavirostris A. maculatus	A. minimus flavirostris	A. minimus flavirostris							A. minimus flavirostris		
Malaya	A. sundaicus		A. umbrosus		A. maculatus(?) A. barbirostris	A. maculatus	A. maculatus	A. aconitus		A. philippinensis			A. annularis (fuliginosus)	A. umbrosus		
Burma	A. sundaicus				A. minimus A. maculatus	A. maculatus	A. maculatus	A. minimus		A. philippinensis			A. minimus A. philippinensis			
India	A. sundaicus	A. annularis		A. superpictus A. jeyporensis	A. minimus A. fluviatilis	A. superpictus (Baluchistan)		A. culicifacies A. minimus		A. philippinensis (in open ponds)	A. culicifacies A. stephensi A. minimus varuna		A. culicifacies A. annularis	A. stephensi A. culicifacies A. minimus varuna	A. stephensi	A. stephensi
Ceylon				A. culicifacies (in sand pools)	A. minimus A. fluviatilis								A. minimus	A. culicifacies A. minimus varuna	A. stephensi	
Thailand, Indo-China		A. tesselatus		A. culicifacies A. jeyporensis	A. minimus A. culicifacies A. maculatus A. barbirostris	A. minimus A. maculatus	A. maculatus	A. culicifacies		A. minimus (?)			A. minimus A. culicifacies A. hyrcanus sinensis	A. culicifacies		
China		A. tesselatus		A. jeyporensis	A. minimus A. maculatus	A. minimus A. maculatus A. pattoni	A. maculatus	A. minimus A. hyrcanus sinensis			A. subpictus		A. hyrcanus sinensis A. minimus A. pattoni			
Near East	A. sacharovi (elutus)			A. culicifacies A. superpictus	A. culicifacies A. superpictus						A. gambiae A. superpictus	A. sergenti			A. stephensi A. claviger	A. stephensi
North Africa	A. maculipennis labranchiae	A. algeriensis A. pharoensis		A. superpictus	A. superpictus			A. multicolor				A. sergenti	A. maculipennis labranchiae			
Central and South Africa		A. funestus A. pharoensis		A. funestus A. nili A. hargreavsi	A. gambiae A. funestus				A. gambiae A. funestus		A. gambiae A. moucheti	A. gambiae A. funestus		A. gambiae		A. funestus A. gambiae
Italy, Balkans, Spain	A. maculipennis labranchiae (also var. atroparvus in Spain and Portugal) A. sacharovi (elutus)			A. superpictus	A. sacharovi (elutus) A. superpictus	A. superpictus						A. sacharovi (elutus)	A. maculipennis labranchiae			
Russia, Eastern Europe	A. sacharovi (elutus)	A. maculipennis messeae A. m. maculipennis		A. superpictus	A. sacharovi (elutus) A. superpictus	A. superpictus			A. maculipennis maculipennis			A. sacharovi (elutus) A. m. maculipennis				
South America		A. albitarsis A. albimanus		A. pseudopunctipennis (pools, algae) A. darlingi	A. argyritarsis					A. albitarsis	A. darlingi and A. bellator (also in bromelaids)	A. tarsimaculatus				
Central America West Indies	A. tarsimaculatus	A. albimanus	A. punctimacula	A. pseudopunctipennis (pools, algae)							A. albimanus	A. tarsimaculatus				
Southern North America										A. quadrimaculatus						
Western North America					A. punctipennis				A. maculipennis freeborni			A. maculipennis freeborni				

EFFECTIVE MOSQUITO CONTROL MEASURES WHICH ARE APPLICABLE TO THESE TYPE BREEDING PLACES

Until adequate mosquito control is established, especially in tropical areas, fairly good malaria control may be obtained by hand-catching or spray killing adult Anopheles in quarters or tents, night and morning.	Open marsh ditching. Dykes, tide gates and ditches. Filling (hydraulic and natural). Increase salt content of water by flooding with sea water. Decrease salt content of water by flooding with fresh water. Oiling. Paris green.	Drainage. Natural and artificial fill. Enclosure by dykes, with flooding plus larvicidal fish. Pollution with decaying vegetation. Oiling. Paris green. Pyrethrum larvicides. Shading.	Drainage. Natural and artificial fill. Clearing to let in sunlight. Pollution with decaying vegetation. Oiling. Paris green. Pyrethrum larvicide.	Channelizing of river stream. Controlled silting of stream bed sides. Clear away or poison grass. Oiling. Paris green. Pyrethrum larvicide.	Subsoil drainage. Open drainage with dense shade. Flushing. Oiling. Larvicidal fish. Paris green.	In Malaya, dense shade, flushing, oiling, subsoil drainage. Elsewhere flushing, channelizing of stream bed. Oiling. Paris green.	Flushing. Continuous drip oiling. (Dense shade against A. maculatus)	Intermittent irrigation. Reshape canal banks. Clear vegetation away. Larvicidal fish. Oiling.	Restriction of excessive use of irrigation water. Canal and ditch lining to reduce seepage. Larvicidal fish. Vertical drainage. Pump out low areas and return water to irrigation canals. Oiling. Paris green. Pyrethrum larvicide.	Clear reservoir bottoms of all vegetation before filling. Fluctuating water levels. Larvicidal fish. Clear vegetation from banks. Oiling. Paris green.	Drainage. Filling. Oiling. Paris green. Pyrethrum larvicide.	Subsoil drainage. Drainage. Oiling. Paris green. Pyrethrum spray on springs used for drinking water.	Intermittent drying. Carefully level paddies before planting. Keep banks clear of vegetation. Muddying water. Larvicidal fish. Pyrethrum larvicide. Oiled sawdust.	Fill in, if not in use. Cover with mosquito-proof cover. Larvicidal fish? Pyrethrum spray. Oiling with a light oil such as kerosene.	Mosquito-proof covers or screens. Frequent change of water with surface disturbance. Larvicidal fish. Pyrethrum spray. Oiling with a light oil.	Remove, empty and/or destroy useless containers, shells, cans, gourds, etc. Empty water out of boats periodically. Cresylic acid larvicide. Oiling.

USE EVERYWHERE AND ALWAYS—Intelligent selection of sites for dwellings, barracks, and camps, to avoid vicinity of Anopheles breeding areas. Avoid also, if possible, proximity to native villages or houses. Effectively screen quarters if possible; otherwise, use bed nets.

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